

Claims

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1. Method for measuring dimensions and alignment of a thin film magnetic head, including the steps of:
illuminating a magnetoresistance effect element and a resistance detector element for monitoring the lapping, both of which are formed on a substrate, with light whose wavelength is in 300 nm or less, preferably being in 200 nm; forming an image by imaging reflected light from said elements;
converting said image to an image signal through photoelectric conversion; and
detecting geometrical information of the above-mentioned magnetoresistance effect element and the above-mentioned resistance detector element for monitoring the lapping from said image signal.
2. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 1, wherein the above-mentioned illuminating light includes a wavelength component of 248 nm.
3. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 1, wherein the above-mentioned illuminating light includes a wavelength component of 266 nm.
4. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 1, wherein the above-mentioned illuminating light includes a wavelength component of 213 nm.
5. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 1, wherein the above-mentioned geometrical information includes dimensions of the element or alignment error of the element.
6. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 1, wherein the above-mentioned magnetoresistance effect element and the above-mentioned resistance detector element for monitoring the lapping are covered with end face protection films.
7. Method for measuring dimensions and alignment of a thin film magnetic head, including the steps of:

illuminating a thin film magnetic head formed on a substrate;

forming interference light by making reflected light from the above-mentioned substrate illuminated with said illumination interfere with the reference light;

obtaining an image signal by picking up an image generated by said interference light thus formed; and measuring dimensions and alignment of the above-mentioned thin film magnetic head.

8. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 7, wherein the above-mentioned thin film magnetic head pattern includes a pattern of a magnetoresistance effect element and that of a resistance detector element for monitoring the lapping.

9. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 7, wherein measurement of dimensions and alignment of the above-mentioned thin film magnetic head is performed by detecting geometrical information of the above-mentioned magnetoresistance effect element and the above-mentioned resistance detector element for monitoring the lapping from the above-mentioned image signal.

10. Method for measuring dimensions and alignment of the thin film magnetic head according to claim 7, wherein wavelength of the light for illuminating the above-mentioned magnetoresistance effect element and the above-mentioned resistance detector element for monitoring the lapping, both of which are formed on the substrate, is in the 300 nm or less, preferably being in 200 nm.

11. Apparatus for measuring dimensions and alignment of thin film magnetic head, comprising:

a light source emitting light whose wavelength is in the 300 nm or less, preferably being in the 200 nm;

illuminating means for illuminating a magnetoresistance effect element and a resistance detector element for monitoring the lapping, both of which are formed on a substrate, with light emitted from the above-mentioned light source;

imaging means for imaging an optical image of the above-mentioned substrate illuminated with the above-mentioned illuminating means;

image picking up means for converting an optical image of the above mentioned substrate which is imaged with the above mentioned imaging means to an image signal through photoconversion; and

geometrical information detecting means for detecting geometrical information of the above-mentioned magnetoresistance effect element and the above-mentioned resistance detector element for monitoring the lapping from the image signal of the above-mentioned substrate that is obtained by the above-mentioned image picking up means.

12. Apparatus for measuring dimensions and alignment of the thin film magnetic head according to claim 11, wherein the above-mentioned light source emits light of a wavelength of 248nm.

13. Apparatus for measuring dimensions and alignment of the thin film magnetic head according to claim 11, wherein the above-mentioned light source emits light of a wavelength of 266 nm.

14. Apparatus for measuring dimensions and alignment of the thin film magnetic head according to claim 11, wherein the above-emitted light source emits light of a wavelength of 213 nm.

15. Apparatus for measuring dimensions and alignment of the thin film magnetic head according to claim 11, wherein the above-mentioned geometrical information that the above-mentioned geometrical information detecting means detects includes dimensions of the element or alignment error of the element.

16. Apparatus for measuring dimensions and alignment of the thin film magnetic head according to claim 11, wherein the above-mentioned magnetoresistance effect element and the above-mentioned resistance detector element for monitoring the lapping, both of which are formed on the above-mentioned substrate, are covered with end face protection films.

17. Apparatus for measuring dimensions and alignment of thin film magnetic head, comprising:

a light source;

illuminating means for illuminating a pattern of the thin film magnetic head formed on a substrate with light emitted from said light source;

interfering means for forming interference light by making reflected light from the above-mentioned substrate illuminated with said illuminating means interfere with a reference light;

image picking up means for obtaining an image signal by picking up an image generated by the above-mentioned interference light which is formed by said interfering means; and

measuring means for measuring dimensions and alignment of the above-mentioned thin film magnetic head from the above-mentioned image signal which is obtained by said image picking up means.

18. Apparatus for measuring dimensions and alignment of the thin film magnetic head according to claim 17, wherein the above-mentioned light source emits light of a wavelength in the 300 nm or less, preferably of a wavelength in 200 nm.

19. Apparatus for measuring dimensions and alignment of the thin film magnetic head according to claim 17, wherein the above-mentioned measuring means detects geometrical information of a magnetoresistance effect element of the above-mentioned thin film magnetic head and a resistance detector element for monitoring the lapping and measures dimensions and alignment of the above-mentioned thin film magnetic head from the detected geometrical information.

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